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45975 7590 07/22/2008

VERENIUM C/O MOFO S.D.
12531 HIGH BLUFF DRIVE
SUITE 100
SAN DIEGO, CA 92130-2040

EXAMINER

RAMIREZ, DELIA M

ART UNIT

PAPER NUMBER

1652

DATE MAILED: 07/22/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,985	12/21/2001	Jay M. Short	564462001811/ D1370-8US	9024
TITLE OF INVENTION: RECOMBINANT BACTERIAL PHYTASES AND USES THEREOF				

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$300	\$0	\$1740	10/22/2008

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE** OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,985	12/21/2001	Jay M. Short	564462001811/ D1370-8US	9024
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APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$300	\$0	\$1740	10/22/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
RAMIREZ, DELIA M	1652	435-183000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____
Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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10/034,985	12/21/2001	Jay M. Short	564462001811/ D1370-8US	9024
45975	7590	07/22/2008	EXAMINER	
VERENIUM C/O MOFO S.D. 12531 HIGH BLUFF DRIVE SUITE 100 SAN DIEGO, CA 92130-2040			RAMIREZ, DELIA M	
			ART UNIT	PAPER NUMBER
			1652	
DATE MAILED: 07/22/2008				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 149 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 149 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability

Application No.

10/034,985

Examiner

Delia M. Ramirez

Applicant(s)

SHORT, JAY M.

Art Unit

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- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 6/5/2008.
2. ☒ The allowed claim(s) is/are 8-28,30,31,33-40,49-59,64 and 66-78.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date See Continuation Sheet
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Continuation of Attachment(s) 3. Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date: 1/17/08,1/29/08,4/7/08.

DETAILED ACTION

Status of the Application

Claims 8-28, 30-31, 33-41, 44, 46, 48-59, 64, 66-78 are pending.

Amendment of claims 8, 12-17, 19-20, 24, 49, 54-55, 58, 66, 73-78 as submitted in a communication filed on 6/5/2008 is acknowledged.

Applicant's submission of a terminal disclaimer on 7/15/2008 is acknowledged.

In view of Applicant's amendments to the claims, specifically the claims now require a phytase that comprises amino acids 1-432 of SEQ ID NO: 2, or amino acids 23-432 of SEQ ID NO: 2, the previous 103(a) rejection applied over the teachings of Chen et al. and Greiner et al. is hereby withdrawn. Neither one of these references teach or suggest the recited phytases.

The Examiner contacted Mr. Gregory Einhorn on 7/9/2008 to discuss additional amendments needed to address new issues raised by the amended claims, as well as the potential double patenting issues raised by rejoining method claims. The Examiner indicated to Mr. Einhorn that a terminal disclaimer needed to be filed to overcome new non-statutory obviousness-type double patenting rejections over claims from U.S. Patent No. 6183740. In a telephone conversation with Mr. Gregory Einhorn on 7/14/2008, an agreement was reached to amend claims 8, 12-20, 24, 49, 51-55, 57-59, 66-78, and cancel claims 41, 44, 46, 48 to place the application in condition for allowance.

In view of the rejoinder of method claims 15-18, 59, 69-70, 77-78, the previous restriction requirement between the elected product and the methods of claims 15-18, 59, 69-70, 77-78 is hereby withdrawn.

Inventorship

1. In view of the papers filed 6/5/2008, it has been found that this nonprovisional application, as filed, through error and without deceptive intent, improperly set forth the inventorship, and accordingly,

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this application has been corrected in compliance with 37 CFR 1.48(a). The inventorship of this application has been changed by the addition of inventors Keith Kretz and Dan Robertson. The application will be forwarded to the Office of Initial Patent Examination (OIPE) for issuance of a corrected filing receipt, and correction of Office records to reflect the inventorship as corrected.

Terminal Disclaimer

2. The terminal disclaimer filed on 7/15/2008 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent No. 6183740 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Information Disclosure Statement

3. The information disclosure statements (IDS) submitted on 1/17/2008, 1/29/2008, and 4/7/2008 are acknowledged. The submissions are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Examiner's Amendment

4. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

5. Authorization for this Examiner's amendment was given in a telephone interview with Mr. Gregory Einhorn on 7/14/2008.

6. Please cancel claims 41, 44, 46, 48.

7. Please replace claims 8, 12-20, 24, 49, 51-55, 57-59, 66-78 as follows:

8. A feed comprising a polypeptide having a phytase activity made by a method comprising the following steps:

- (a) providing a nucleic acid that:
 - (i) comprises the sequence of SEQ ID NO: 1; or
 - (ii) comprises the sequence of SEQ ID NO: 1, wherein T is substituted with U; or
 - (iii) comprises the sequence of SEQ ID NO: 1 from nucleotides 1 to 1296; or
 - (iv) comprises the sequence of SEQ ID NO: 1 from nucleotides 1 to 1296, wherein T is substituted with U; or
 - (v) encodes the polypeptide of SEQ ID NO: 2; or
 - (vi) encodes the polypeptide of SEQ ID NO: 2 from amino acids 1 to 432;
- (b) providing a composition comprising a feed;
- (c) expressing the nucleic acid of (a) under conditions which allow expression of the polypeptide having a phytase activity; and
- (d) mixing the phytase of (c) with the composition of (b), thereby making a feed comprising a polypeptide having a phytase activity.

12. The feed of claim 8, wherein the nucleic acid consists of the sequence of:

- (a) SEQ ID NO: 1; or
- (b) SEQ ID NO: 1, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 1 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 1 to 1296, wherein T is substituted with U;
or wherein the polypeptide having a phytase activity has the amino acid sequence of:
 - (i) SEQ ID NO: 2; or

- (ii) SEQ ID NO: 2 from amino acids 1 to 432.

13. A feed comprising a recombinant or a synthetic polypeptide having a phytase activity, wherein the recombinant or synthetic polypeptide having a phytase activity is encoded by a nucleic acid having the sequence of:

- (a) SEQ ID NO: 1; or
 - (b) SEQ ID NO: 1, wherein T is substituted with U; or
 - (c) SEQ ID NO: 1 from nucleotides 1 to 1296; or
 - (d) SEQ ID NO: 1 from nucleotides 1 to 1296; wherein T is substituted with U;
- or wherein the recombinant or synthetic polypeptide having a phytase activity has the amino acid sequence of:

- (i) SEQ ID NO: 2; or
- (ii) SEQ ID NO: 2 from amino acids 1 to 432.

14. The feed of claim 13, wherein the recombinant or synthetic polypeptide having a phytase activity is encoded by a nucleic acid consisting of the sequence of:

- (a) SEQ ID NO: 1; or
 - (b) SEQ ID NO: 1; wherein T is substituted with U; or
 - (c) SEQ ID NO: 1 from nucleotides 1 to 1296; or
 - (d) SEQ ID NO: 1 from nucleotides 1 to 1296, wherein T is substituted with U;
- or wherein the recombinant or synthetic polypeptide having a phytase activity has the amino acid sequence of:
- (i) SEQ ID NO: 2; or
 - (ii) SEQ ID NO: 2 from amino acids 1 to 432.

15. A method for treating a phytate-containing feed to lower the phytate content in the feed and increasing the amount of inorganic phosphorous in the feed comprising:
- (a) providing a recombinant polypeptide having a phytase activity, wherein said polypeptide:
 - (i) is encoded by a nucleic acid having the sequence of SEQ ID NO: 1; or
 - (ii) is encoded by a nucleic acid having the sequence of SEQ ID NO: 1, wherein T is substituted with U; or
 - (iii) is encoded by a nucleic acid having the sequence of SEQ ID NO: 1 from nucleotides 1 to 1296; or
 - (iv) is encoded by a nucleic acid having the sequence of SEQ ID NO: 1 from nucleotides 1 to 1296, wherein T is substituted with U; or
 - (v) has the amino acid sequence of SEQ ID NO: 2; or
 - (vi) has the amino acid sequence of SEQ ID NO: 2 from amino acids 1 to 432;
 - (b) providing a composition comprising a phytate-containing feed;
 - (c) contacting the recombinant polypeptide having a phytase activity of (a) with the composition of (b) under conditions wherein the recombinant polypeptide having a phytase activity catalyzes the hydrolysis of phytate, thereby making a feed lower in phytate content and higher in inorganic phosphorous content.
16. The method of claim 15, wherein the recombinant polypeptide having a phytase activity is encoded by a nucleic acid having the sequence of SEQ ID NO: 1, or wherein the recombinant polypeptide having a phytase activity has the amino acid sequence of SEQ ID NO: 2.
17. A method for supplementing the diet of an animal by increasing the amount of inorganic

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phosphorous in an ingested feed comprising feeding to the animal a composition comprising a recombinant phytase, wherein the recombinant phytase is encoded by a nucleic acid having the sequence of :

- (a) SEQ ID NO: 1; or
- (b) SEQ ID NO: 1, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 1 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 1 to 1296, wherein T is substituted with U;
or wherein the recombinant phytase has the amino acid sequence of:
 - (i) SEQ ID NO: 2; or
 - (ii) SEQ ID NO: 2 from amino acids 1 to 432.

18. The method of claim 17, wherein the recombinant phytase is encoded by a nucleic acid having the sequence of SEQ ID NO: 1, or wherein the recombinant phytase has the amino acid sequence of SEQ ID NO:2.

19. A food supplement for an animal comprising a composition comprising a recombinant polypeptide having a phytase activity, wherein the recombinant polypeptide having a phytase activity is encoded by a nucleic acid having the sequence of :

- (a) SEQ ID NO: 1; or
- (b) SEQ ID NO: 1, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 1 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 1 to 1296, wherein T is substituted with U;
or wherein the recombinant polypeptide having a phytase activity has the amino acid sequence of:

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- (i) SEQ ID NO: 2; or
- (ii) SEQ ID NO: 2 from amino acids 1 to 432.

20. The food supplement of claim 19, wherein the recombinant polypeptide having a phytase activity is encoded by a nucleic acid consisting of the sequence of:

- (a) SEQ ID NO: 1; or
- (b) SEQ ID NO: 1, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 1 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 1 to 1296, wherein T is substituted with U;
or wherein the recombinant polypeptide having a phytase activity has the amino acid sequence of:
 - (i) SEQ ID NO: 2; or
 - (ii) SEQ ID NO: 2 from amino acids 1 to 432.

24. A drinkable foodstuff comprising a recombinant polypeptide having a phytase activity, wherein the recombinant polypeptide having a phytase activity is encoded by a nucleic acid having the sequence of:

- (a) SEQ ID NO: 1; or
- (b) SEQ ID NO: 1, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 1 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 1 to 1296, wherein T is substituted with U;
or wherein the recombinant polypeptide having a phytase activity has the amino acid sequence of:
 - (i) SEQ ID NO: 2; or

- (ii) SEQ ID NO: 2 from amino acids 1 to 432.

49. The drinkable foodstuff of claim 24, wherein the recombinant polypeptide having a phytase activity is encoded by a nucleic acid consisting of the sequence of :

- (a) SEQ ID NO: 1; or
- (b) SEQ ID NO: 1, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 1 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 1 to 1296, wherein T is substituted with U;
or wherein the recombinant polypeptide having a phytase activity has the amino acid sequence of:
 - (i) SEQ ID NO: 2; or
 - (ii) SEQ ID NO: 2 from amino acids 1 to 432.

51. The food supplement of claim 50, wherein the nucleic acid is expressed in a yeast cell under conditions which allow expression of the recombinant polypeptide having a phytase activity in the yeast cell.

52. The food supplement of claim 50, wherein the recombinant polypeptide having a phytase activity comprises a signal peptide (a leader sequence) and is secreted by the cell.

53. A feed comprising a recombinant or a synthetic polypeptide having a phytase activity, wherein the recombinant or synthetic polypeptide having a phytase activity lacks the native signal peptide and comprises a heterologous signal peptide, and wherein said recombinant or a synthetic polypeptide is encoded by a nucleic acid having the sequence of :

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- (a) SEQ ID NO: 1 except for the nucleotides encoding the amino acid residues 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides encoding the amino acid residues 1 to 22 of SEQ ID NO: , wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296; wherein T is substituted with U; or wherein the recombinant or synthetic polypeptide having a phytase activity has the amino acid sequence of:
 - (i) SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or
 - (ii) SEQ ID NO: 2 from amino acids 23 to 432.

54. A feed comprising a polypeptide having a phytase activity, wherein said polypeptide lacks the native signal peptide, wherein said polypeptide is made by a method comprising the following steps:

- (a) providing a nucleic acid that:
 - (i) comprises the sequence of SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2; or
 - (ii) comprises the sequence of SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
 - (iii) comprises the sequence of SEQ ID NO: 1 from nucleotides 67 to 1296; or
 - (iv) comprises the sequence of SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U; or

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- (v) encodes the polypeptide of SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or
- (vi) encodes the polypeptide of SEQ ID NO: 2 from amino acids 23 to 432;
- (b) providing a composition comprising a feed;
- (c) expressing the nucleic acid of (a) under conditions which allow expression of the polypeptide having a phytase activity; and
- (d) mixing the phytase of (c) with the composition of (b), thereby making a feed comprising a polypeptide having a phytase activity.

55. A food supplement for an animal comprising a composition comprising a recombinant polypeptide having a phytase activity, wherein the recombinant polypeptide having a phytase activity lacks the native signal peptide, and wherein the recombinant peptide having a phytase activity is encoded by a nucleic acid having the sequence of :

- (a) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U;
or wherein the recombinant polypeptide having a phytase activity has the amino acid sequence of:
 - (i) SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or
 - (ii) SEQ ID NO: 2 from amino acids 23 to 432.

57. The drinkable foodstuff of claim 56, wherein the recombinant polypeptide having a phytase activity comprises a signal peptide (a leader sequence) and is secreted by the cell.

58. A drinkable foodstuff comprising a recombinant polypeptide having a phytase activity, wherein the recombinant polypeptide having phytase activity lacks the native signal peptide, and wherein the recombinant polypeptide having a phytase activity is encoded by a nucleic acid having the sequence of:

- (a) SEQ ID NO: 1 except for the nucleotides that encode amino acids 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides that encode amino acids 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U;
or wherein the recombinant polypeptide having a phytase activity has the amino acid sequence of:
 - (i) SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or
 - (ii) SEQ ID NO: 2 from amino acids 23 to 432.

59. A method for treating a phytate-containing feed to lower the phytate content in the feed and increasing the amount of inorganic phosphorous in the feed comprising the following steps:

- (a) providing a recombinant polypeptide having a phytase activity, wherein said recombinant having a phytase activity lacks the native signal peptide and has a heterologous signal peptide, wherein said recombinant polypeptide having a phytase activity:

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- (i) is encoded by a nucleic acid comprising SEQ ID NO: 1 except for the nucleotides encoding amino acids 1 to 22 of SEQ ID NO: 2; or
 - (ii) is encoded by a nucleic acid comprising SEQ ID NO: 1 except for the nucleotides encoding amino acids 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
 - (iii) is encoded by a nucleic acid comprising SEQ ID NO: 1 from nucleotides 67 to 1296; or
 - (iv) is encoded by a nucleic acid comprising SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U; or
 - (v) comprises SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or
 - (vi) comprises SEQ ID NO: 2 from amino acids 23 to 432;
- (b) providing a composition comprising a phytate-containing feed; and
- (c) contacting the recombinant polypeptide having a phytase activity of (a) with the composition of (b) under conditions wherein the polypeptide having a phytase activity catalyzes the hydrolysis of phytate, thereby making a feed lower in phytate content and higher in inorganic phosphorous content.

66. A feed comprising a recombinant or a synthetic polypeptide having a phytase activity, wherein the recombinant or synthetic polypeptide having a phytase activity lacks the native signal peptide and is encoded by a nucleic acid having the sequence of :

- (a) SEQ ID NO: 1 except for the nucleotides encoding the amino acid residues 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides encoding the amino acid residues 1 to 22 of SEQ ID NO: , wherein T is substituted with U; or

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- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296; wherein T is substituted with U;
or wherein the recombinant or synthetic polypeptide having a phytase activity has the amino acid sequence of:
 - (i) SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or
 - (ii) SEQ ID NO: 2 from amino acids 23 to 432.

67. A feed comprising a polypeptide having a phytase activity, wherein said polypeptide lacks the native signal peptide and comprises a heterologous signal peptide, wherein said polypeptide is made by a method comprising the following steps:

- (a) providing a nucleic acid that:
 - (i) comprises the sequence of SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2; or
 - (ii) comprises the sequence of SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U;
or
 - (iii) comprises the sequence of SEQ ID NO: 1 from nucleotides 67 to 1296; or
 - (iv) comprises the sequence of SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U; or
 - (v) encodes the polypeptide of SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or
 - (vi) encodes the polypeptide of SEQ ID NO: 2 from amino acids 23 to 432;
- (b) providing a composition comprising a feed;
- (c) expressing the nucleic acid of (a) under conditions which allow expression of the

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polypeptide having a phytase activity; and

- (d) mixing the phytase of (c) with the composition of (b), thereby making a feed comprising a polypeptide having a phytase activity.

68. A method for treating a phytate-containing feed to lower the phytate content in the feed and increasing the amount of inorganic phosphorous in the feed comprising the following steps:

- (a) providing a recombinant polypeptide having a phytase activity, wherein said recombinant having a phytase activity lacks the native signal peptide, wherein said recombinant polypeptide having a phytase activity:
- (i) is encoded by a nucleic acid comprising SEQ ID NO: 1 except for the nucleotides encoding amino acids 1 to 22 of SEQ ID NO: 2; or
 - (ii) is encoded by a nucleic acid comprising SEQ ID NO: 1 except for the nucleotides encoding amino acids 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
 - (iii) is encoded by a nucleic acid comprising SEQ ID NO: 1 from nucleotides 67 to 1296; or
 - (iv) is encoded by a nucleic acid comprising SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U; or
 - (v) comprises SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or
 - (vi) comprises SEQ ID NO: 2 from amino acids 23 to 432;
- (b) providing a composition comprising a phytate-containing feed; and
- (c) contacting the recombinant polypeptide having a phytase activity of (a) with the composition of (b) under conditions wherein the polypeptide having a phytase activity catalyzes

the hydrolysis of phytate, thereby making a feed lower in phytate content and higher in inorganic phosphorous content.

69. A method for supplementing the diet of an animal by increasing the amount of inorganic phosphorous in an ingested feed comprising feeding to the animal a composition comprising a recombinant phytase, wherein the recombinant phytase lacks the native signal peptide, and wherein said recombinant phytase is encoded by a nucleic acid having the sequence of:

- (a) SEQ ID NO: 1 except for the nucleotides encoding the amino acid residues 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides encoding the amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U;
or wherein the recombinant phytase has the amino acid sequence of:
 - (i) SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or
 - (ii) SEQ ID NO: 2 from amino acids 23 to 432.

70. A method for supplementing the diet of an animal by increasing the amount of inorganic phosphorous in an ingested feed comprising feeding to the animal a composition comprising a recombinant phytase, wherein the recombinant phytase lacks the native signal peptide and comprises a heterologous signal peptide, and wherein said recombinant phytase is encoded by a nucleic acid having the sequence of:

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- (a) SEQ ID NO: 1 except for the nucleotides encoding the amino acid residues 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides encoding the amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U;
or wherein the recombinant phytase has the amino acid sequence of:
 - (i) SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or
 - (ii) SEQ ID NO: 2 from amino acids 23 to 432.

71. A food supplement for an animal comprising a composition comprising a recombinant polypeptide having a phytase activity, wherein the recombinant polypeptide having a phytase activity lacks the native signal peptide and comprises a heterologous signal peptide, and wherein the recombinant peptide having a phytase activity is encoded by a nucleic acid having the sequence of :

- (a) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U;
or wherein the recombinant polypeptide having a phytase activity has the amino acid sequence of:
 - (i) SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or

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- (ii) SEQ ID NO: 2 from amino acids 23 to 432.

72. A drinkable foodstuff comprising a recombinant polypeptide having a phytase activity, wherein the recombinant polypeptide having phytase activity lacks the native signal peptide and comprises a heterologous signal peptide, and wherein the recombinant polypeptide having a phytase activity is encoded by a nucleic acid having the sequence of:

- (a) SEQ ID NO: 1 except for the nucleotides that encode amino acids 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides that encode amino acids 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U; or wherein the recombinant polypeptide having a phytase activity has the amino acid sequence of:
 - (i) SEQ ID NO: 2 except for amino acids 1 to 22 of SEQ ID NO: 2; or
 - (ii) SEQ ID NO: 2 from amino acids 23 to 432.

73. The feed of claim 54 or claim 67 wherein the polypeptide having a phytase activity comprises amino acid residues 23 to 432 of SEQ ID NO: 2, or is encoded by a nucleic acid having the sequence of:

- (a) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or

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- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U.

74. The feed of claim 66 wherein the recombinant or synthetic polypeptide having a phytase activity comprises amino acid residues 23 to 432 of SEQ ID NO: 2, or is encoded by a nucleic acid having the sequence of:

- (a) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U.

75. The food supplement of claim 55 or claim 71 wherein the recombinant polypeptide having a phytase activity comprises amino acid residues 23 to 432 of SEQ ID NO: 2, or is encoded by a nucleic acid having the sequence of:

- (a) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U.

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76. The drinkable foodstuff of claim 58 or claim 72 wherein the recombinant polypeptide having a phytase activity comprises amino acid residues 23 to 432 of SEQ ID NO: 2, or is encoded by a nucleic acid having the sequence of:

- (a) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U.

77. The method of claim 59, wherein the recombinant polypeptide having a phytase activity comprises amino acid residues 23 to 432 of SEQ ID NO: 2, or is encoded by a nucleic acid having the sequence of:

- (a) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2; or
- (b) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U.

78. The method of claim 70, wherein the recombinant phytase comprises amino acid residues 23 to 432 of SEQ ID NO: 2, or is encoded by a nucleic acid having the sequence of:

- (a) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2; or

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- (b) SEQ ID NO: 1 except for the nucleotides that encode amino acid residues 1 to 22 of SEQ ID NO: 2, wherein T is substituted with U; or
- (c) SEQ ID NO: 1 from nucleotides 67 to 1296; or
- (d) SEQ ID NO: 1 from nucleotides 67 to 1296, wherein T is substituted with U.

Reasons for Allowance

8. The following is an Examiner's statement of reasons for allowance. Although the prior art discloses *E. coli* phytases, the Examiner has found no teaching or suggestion in the prior art directed to the phytase of SEQ ID NO: 2 or compositions comprising said phytase. Therefore, claims 8-28, 30-31, 33-40, 49-59, 64, 66-78, directed to (1) compositions comprising (i) the polypeptide of SEQ ID NO: 2, or (ii) the polypeptide of SEQ ID NO: 2 lacking its signal peptide, (2) a method for treating a feed with said polypeptides, and (3) a method for supplementing the diet of an animal by feeding an animal a composition comprising said polypeptides, are allowable over the prior art of record.

Conclusion

- 9. Claims 8-28, 30-31, 33-40, 49-59, 64, 66-78 are allowed.
- 10. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."
- 11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delia M. Ramirez whose telephone number is (571) 272-0938. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Nashaat Nashed can be reached on (571) 272-0934. Any

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inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.

/Delia M. Ramirez/

Delia M. Ramirez, Ph.D.
Primary Patent Examiner
Art Unit 1652

DR
July 21, 2008